

GOVT. OF INDIA
TARIFF COMMISSION

Report on
The Continuance of Protection
TO
The Grinding Wheels Industry



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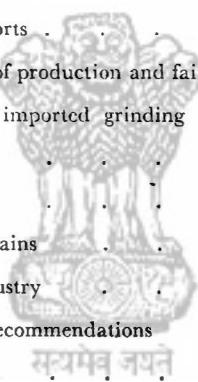
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CONTENTS

	PAGE
PARA.	
1. The present inquiry	1
2. Previous tariff inquiries	1
3. Method of inquiry	3
4. Scope of the inquiry	3
5. Present position of the industry	4
6. Rated capacity and production	8
7. Domestic demand	9
8. Raw materials	10
9. Quality of the indigenous product	11
10. Existing rate of duty	13
11. Import control policy and imports	14
12. Commission's estimate of cost of production and fair selling prices	14
13. C.i.f. prices and landed costs of imported grinding wheels	17
14. Measure of protection	18
15. Changes in the tariff schedule	19
16. Duty on synthetic abrasive grains	20
17. Future development of the industry	20
18. Summary of conclusions and recommendations	21
19. Acknowledgements	22



APPENDIX

I. List of persons or bodies to whom the Commission's questionnaires were issued and from whom replies or memoranda were received	23
II. List of persons who attended the public inquiry on 21st October 1954 and gave evidence	25
III. Statement showing the ex-works costs and fair f.o.r. Bombay price (with freight disadvantage) of grinding wheels for the year 1953	26-27
IV. Statement showing the estimated future costs and fair f.o.r. Bombay price including freight disadvantage for grinding wheels	28-29
V. Statement showing the c.i.f. prices and landed costs of grinding wheels as furnished by leading importers and collectors of customs	30-31
VI. Statement showing c.i.f. prices and landed costs, with and without duty, of grinding wheels and comparative percentages of disadvantages suffered by corresponding types and sizes of indigenous wheels	32-33

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY
NOTIFICATION

TARIFFS

New Delhi, the 2nd August, 1955

No. 16(3)-T.B./54.—WHEREAS the Central Government is satisfied after due inquiry that the duty chargeable under the Indian Tariff Act, 1934 (XXXII of 1934) in respect of the article specified in Item No. 71(8) of the First Schedule to the said Act and characterised as protective in the third column thereof, has become excessive for the purpose of securing the protection intended to be afforded by it to similar articles manufactured in India;

Now, THEREFORE, in exercise of the powers conferred by sub-section (1) of Section 4 of the said Act, as in force in India and as applied to the State of Pondicherry, the Central Government hereby reduces with effect from the 2nd August, 1955, the duty of customs on the said article so that the duty chargeable shall from the said date be as specified in column (3) of the table annexed hereto.

THE TABLE

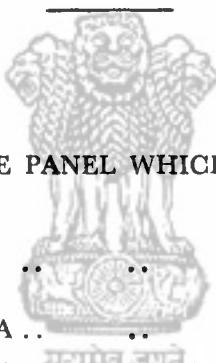
Item No. of Tariff	Name of Article	Rate of duty	
		1	2	3
71(8)	Grinding wheels and segments made of synthetic abrasive grains, excluding the following, namely :		25 per cent. <i>ad valorem.</i>
	(i) grinding wheels—		
	(a) of any thickness or bore but more than 21 inches in diameter, or		
	(b) of any diameter or bore but more than 7½ inches or less than 1/8 inches thickness, or		
	(c) of any diameter or thickness but more than 12½ inches bore; and		
	(ii) Diamond impregnated wheels.		

L. K. JHA,

Joint Secretary to the Government of India.

PERSONNEL OF THE COMMISSION

SHRI M. D. BHAT	Chairman
SHRI B. N. ADARKAR, M.A. (CANTAB.)	Member
SHRI B. N. DAS GUPTA, B.A., A.S.A.A. (LONDON), F.G.A.	Member
SHRI C. RAMASUBBAN	Member
DR. RAMA VARMA	Secretary



PERSONNEL OF THE PANEL WHICH HEARD THE CASE

SHRI B. N. ADARKAR	Member
SHRI B. N. DAS GUPTA	Member
SHRI C. RAMASUBBAN	Member

GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY
RESOLUTION

TARIFFS

New Delhi, the 2nd August, 1955

No. 16(3)-T.B./54.—The Tariff Commission has submitted its Report on the continuance of protection to the Grinding Wheels Industry beyond the 31st December, 1955. Its recommendations are as follows :—

- (1) The following types and sizes of grinding wheels should be excluded from the scheme of protection :—
 - (i) Grinding wheels having (a) more than 24 inches diameter, or (b) less than 1/32 inch or more than 9 inches in thickness.
 - (ii) Diamond impregnated wheels.
- (2) The protective duty on grinding wheels and segments of all kinds other than those to be excluded from the scheme of protection should be reduced from 50 per cent. *ad valorem* exclusive of surcharge, to 25 per cent. *ad valorem* including surcharge. The protective duty should remain in force till 31st December, 1957.
- (3) The varieties of grinding wheels excluded from the scheme of protection should be subject to a revenue duty of 25 per cent. *ad valorem* including surcharge.
- (4) The concession of duty free imports of synthetic abrasive grains should be continued during the period of protection.
- (5) The Indian Standards Institution should be requested to expedite the formulation of standard specifications for grinding wheels.
- (6) Grindwell Abrasives Ltd., should bring down their costs of production of grinding wheels, concentrate their efforts on the production of the most economical range of products and provide an improved after sales service to consumers.

2. Government accept recommendations (1) to (5) and will take suitable action to implement them.

3. The attention of the Grindwell Abrasives Ltd. is invited to recommendation (6).

4. Government have also decided in consultation with the Tariff Commission that the existing policy of placing all Government orders with the domestic industry for the varieties of grinding wheels and segments which can be manufactured locally should be continued so long as the prices quoted by the domestic industry are not unreasonable.

(ii)

5. Government note with regret that according to the Commission consumers have not had a fair share of the very considerable benefits that have accrued to the sole producing unit during the period in which it has been enjoying an ample quantum of protection and has been in a monopolistic position internally. Government hope that with the reduction in the quantum of protection and with increased internal competition which is shortly expected to come about, the interests of the consumers of this vital requirement of engineering industries will be safeguarded. Government propose, however, to keep the situation under careful watch and they will not hesitate to impose price control or to adopt any other measures that may appear to be necessary to ensure that the consumer gets a fair deal.

ORDER

ORDERED that a copy of the Resolution be communicated to all concerned and that it be published in the *Gazette of India*.

L. K. JHA,
Joint Secretary to the Government of India.



REPORT ON THE CONTINUANCE OF PROTECTION TO THE GRINDING WHEELS INDUSTRY

The present inquiry

1. The Government of India in the Ministry of Commerce and Industry, by their Resolution No. 16(4)TB/51 of 20th May 1952, decided to continue protection to the grinding wheels industry till the 31st December 1954. Pending a review of the case by the Tariff Commission, the period of protection was extended for a further period of one year by the Indian Tariff (Third Amendment) Act, 1954. The present inquiry is undertaken by us under Section 11(e) read with Section 13 of the Tariff Commission Act under which the Commission is empowered to investigate into the working of protection granted to an industry and to recommend any further action required with a view to increase, decrease, modification or abolition of protection according to the circumstances of the case.

Previous tariff inquiries

2. (a) The claim of the grinding wheels industry to protection or assistance was first examined by the Tariff Board in March 1946 when they recommended that a protective duty of 80 per cent. *ad valorem* should be levied on all grinding wheels and segments for a period of three years, that licences for imports of grinding wheels, segments, oil stones, sharpening stones, etc., should not be granted for the remainder of 1946, and that all Railway and Government orders for grinding wheels and segments should be placed with the Indian manufacturers up to the limit of their productive capacity. The Government of India accepted the last mentioned recommendation but with regard to the other two, they held the view that as the industry was not likely to survive even with as high an import duty as 80 per cent., it should be given direct protection. They, therefore, decided that all imports of grinding wheels should be prohibited throughout the financial year 1947-48 except for qualities of grinding wheels which could not be produced in India, that a duty of 50 per cent. should be imposed on the special qualities of grinding wheels which could not be produced in India, and a duty of 50 per cent. should be imposed on the varieties manufactured in India when the import restrictions on grinding wheels were removed. The protection granted to the industry was also made subject to two conditions, *viz.*, that Grindwell Ltd. and Kata Grinding Wheel Works (which were the two producing units) should take early steps to convert themselves into public limited companies and that the agreement which was reported to have been arrived at between the foreign and the Indian shareholders in Grindwell Ltd., whereby the former had agreed to transfer their shares to the latter should be carried out at an early date. The restrictions on imports of grinding wheels continued till December 1948, after which they were placed on O.G.L. The question of the quantum of import duty to be levied after removal of import restrictions was reconsidered by Government who decided to impose, as previously recommended by the Tariff Board, a duty of 80 per cent. *ad valorem* on all varieties of grinding wheels with effect from 4th December 1948. This duty was to remain in force up to 31st December 1950.

(b) The case of the industry was taken up for review by the Tariff Board in April 1949 upon representations made by Grindwell Ltd. to the effect that the duty of 80 per cent. was not adequate to protect the industry. After investigation the Board recommended that the duty should be increased to 100 per cent. *ad valorem*. This was accepted by Government in a resolution dated 11th May 1949. Acting on a recommendation by the Board in 1950, Government extended the protective duty of 100 per cent., which was due to expire on the 31st December 1950, by one year up to 31st December 1951. Under the Finance Act of 1951 a surcharge of 5 per cent. was imposed on the existing duty, bringing the total duty to 105 per cent. *ad valorem*.

(c) In November 1951, the Tariff Board reviewed the case of the industry for continuance of protection and made the following recommendations :—

- (i) "The protective duty on grinding wheels and segments of all kinds, other than those which are to be excluded from the scheme of protection, should be reduced from the existing rate of 105 per cent. *ad valorem* including surcharge to 47½ per cent. *ad valorem* excluding surcharge or 50 per cent. *ad valorem* including surcharge.
- (ii) The following types and sizes of grinding wheels should be excluded from the scheme of protection :—
 - (1) Grinding wheels having (a) more than 21" diameter, or (b) less than $\frac{1}{8}$ " or more than 7½" thickness, or (c) more than 12½" bore ;
 - (2) Diamond impregnated wheels ;
 - (3) Thread grinding wheels ; and
 - (4) Natural grinding stones of any shape or size.
- (iii) The industry should continue to receive protection for a further period of 3 years from 31st December 1951, but in view of the uncertainty regarding the future trend of import prices and the changes contemplated by the firm in its pattern of production, the quantum of protection should be reviewed towards the end of 1953.
- (iv) The varieties of grinding wheels which are to be excluded from the scheme of protection should be subject to a revenue duty of 31½ per cent. *ad valorem*.
- (v) Grindwells should take all possible steps to expedite their deliveries and should also endeavour to maintain reasonable stocks of the varieties of grinding wheels which are in general demand and of those normally required by their regular customers.
- (vi) In addition to limiting the aggregate quantum of imports to the amount required to bridge the gap between domestic demand and production, preference should be given to imports of those types of grinding wheels and segments which the domestic industry does not propose to produce for the time being.
- (vii) The existing policy of placing all Government orders with the domestic industry for the varieties of grinding wheels and segments which can be manufactured locally should be continued.

(viii) The concession hitherto granted to Grindwells to import synthetic abrasive grains free of duty should be continued up to 31st December 1952 and extended to the new unit to be established by Messrs. Krishnalal Thirani, if it comes into production before that date."

Government accepted the above recommendations subject to the modifications that the protective duty will be reduced to 50 per cent. *ad valorem* exclusive of surcharge, that thread grinding wheels will not be excluded from the scheme of protection and that the revenue duty on the deprotected categories of grinding wheels will be fixed at 25 per cent. *ad valorem* plus the usual surcharge.

(d) As regards the two conditions imposed on the industry when it was first granted protection [vide para. (a) above], Grindwell Ltd. fulfilled the first of them in 1950 when they transferred their entire business as a going concern to a newly formed public limited company called Grindwell Abrasives Ltd. No information is available about Kata Grinding Wheel Works, Amritsar. As regards the second condition, we are informed that the entire capital of Grindwell Abrasives Ltd. is now held by Indians.

Method of inquiry

3. On the 6th of September 1954 a press communique was issued inviting manufacturers, importers and consumers and those interested in the industry or in the industries dependent upon the use of grinding wheels desiring consideration of their views to obtain copies of the questionnaires from the Secretary to the Commission and to submit their replies or memoranda. Simultaneously, questionnaires were also issued to all the known producers, importers and consumers. A list of persons, associations and firms to whom questionnaires were issued and of those who submitted their replies or memoranda is given in Appendix I. The Directors of Industries, Bombay and West Bengal, and the Development Wing of the Ministry of Commerce and Industry, New Delhi, were requested to forward detailed memoranda regarding the present position of the industry. Information regarding the c. i. f. prices and landed costs of grinding wheels was sought from the Collectors of Customs, Bombay, Madras and Calcutta. The Chief Controller of Imports and Exports, New Delhi was requested to furnish the Commission with particulars regarding the import and export control policies in respect of grinding wheels from 1951 onwards. A letter was addressed to the Railway Board, New Delhi as regards the present classification of grinding wheels in the Goods Tariff General Rules. Shri S. K. Basu, Cost Accounts Officer of the Commission, visited the factory of Messrs. Grindwell Abrasives Ltd. at Uran, Bombay, from the 15th to the 17th of September and examined the cost of production of grinding wheels manufactured by the Company. Shri B. N. Adarkar and Shri Ramasubban, Members of the Commission, visited the same factory on 18th October 1954. A public inquiry was held at the Commission's Office in Bombay on the 21st October 1954. A list of those who attended the inquiry and gave evidence is given in Appendix II.

Scope of the inquiry

4. (a) The existing scheme of protection includes grinding wheels and segments made of synthetic abrasive grains excluding (1) grinding wheels of (a) any thickness or bore but more than 21

inches in diameter, (b) any diameter or bore but more than $7\frac{1}{2}$ inches or less than $\frac{1}{8}$ inch thickness, or (c) any diameter or thickness but more than $12\frac{1}{2}$ inches bore, and (2) diamond impregnated wheels. The recommendation made by the Tariff Board in 1951 that thread grinding wheels should also be excluded from the scope was not accepted by Government as it was considered that it would not be possible for the Customs authorities to easily distinguish these from ordinary straight grinding wheels even if they were supplied with the full range of sizes and detailed specifications. Since grinding wheels which are in common use are made of synthetic abrasive grains only, natural grinding wheels of any shape or size have also been excluded from the scope of the inquiry. Rubber bonded wheels are also not manufactured in India, but since such wheels are likely to compete with bakelite bonded wheels which are being manufactured, they have been included in the scope of protection.

(b) Grindwell Abrasives Ltd. have stated in their replies to our questionnaire that with the exception of grinding wheels of more than 36 inches diameter, less than $1/32$ inch or more than 9 inches thickness, and diamond impregnated wheels, all other varieties of grinding wheels are manufactured by them. The subject was discussed at the public inquiry with the producers and representatives of consuming interests. It was represented to us that while the Company was capable of producing all the standard types and sizes in normal demand, there were delays in delivery especially in the case of sizes above 21 inches in diameter, where the bottle-neck was the firing kiln in which the firing of small wheels with larger ones resulted in delaying the process by some weeks at a time. We were, however, informed by the Company that after the installation of a tunnel kiln which was expected to arrive in a few weeks, and which will be in commission by March-April 1955, their production difficulties concerning wheels up to 24 inches in diameter would be fully got over. It was also represented that as a new factory with foreign collaboration (Carborundum Universal Ltd.) was expected to go into production sometime about the latter part of 1955, there was no need to exclude from the scope of the inquiry any sizes or types other than those which cannot be made by Grindwell Abrasives Ltd., or have not been included in the production programme of the new unit. The Company does not have any technical difficulty at present with regard to the production of wheels with large bores and up to 9 inches thickness. As regards Carborundum Universal Ltd., we have been advised that wheels beyond 22 inches in diameter will not be manufactured by them. In the circumstances, we have decided that only the following types and sizes of grinding wheels should be excluded from the scheme of protection :—

- (1) Grinding wheels of any of the following specifications :
 - (a) more than 24 inches in diameter,
 - (b) less than $1/32$ inch or more than 9 inches in thickness ;
- (2) Diamond impregnated wheels.

Present position of the industry

5. At present the industry consists of only one unit engaged in production, *viz.*, Grindwell Abrasives Ltd. But two more units are

expected to go into production this year. Particulars regarding all the three units are given below :—

(i) *General Abrasive Co., Bombay.*—This is a private firm of two partners. The capital invested in the business is Rs. one lakh. The declared value of the plant and machinery is Rs. 45,000 and the rated capacity of the factory 120 tons per year. The firm claims to be capable of manufacturing grinding wheels of sizes up to 18 inches diameter, 6 inches thickness and 8 inches bore and to have made arrangements with certain well-known German and American technical experts to obtain the technical know-how and information on the manufacturing process. It intends to set up the factory at the refugee township of Ulhasnagar, near Kalyan, and expects to finalise the project with a periodic kiln early in 1955.

(ii) *Carborundum Universal Ltd.*—This is a public limited company which was registered in Madras in April 1954 with an authorised share capital of Rs. 70 lakhs and a subscribed share capital of Rs. 50 lakhs consisting of 50,000 shares of Rs. 100 each, of which 15,500 shares will be available for public subscription. Of the eight Directors, four represent the foreign collaborating interests, viz., the Carborundum Co. Ltd., and the Universal Grinding Wheel Co. Ltd.; 27 per cent. of the shares will be held by Carborundum Co. Ltd., and 22 per cent. by Universal Grinding Wheel Co. Ltd., while the balance of 51 per cent. will be held by Indians. These two companies are reported to be among the best known producers of grinding wheels in the world possessing the largest measure of technical knowledge and several years of development and research, and holding patents and formulae relating to the processes of manufacturing coated and bonded abrasives, and allied products. The capacity of the Indian Company will be 600 tons per annum, and it is expected to go into production in May-June 1955. We are informed that construction of the factory building is half complete, and that shipment of the first instalment of machinery has been effected. Production would be first started with a periodic kiln, and a tunnel kiln which has been ordered out would also be erected during 1955. In the circumstances, the capacity during the early part of the factory's working would be about 250 tons, which is expected to be gradually stepped up to 600 tons by the end of 1955. The range of grinding wheels to be manufactured will be fairly comprehensive, but will be limited to a maximum diameter of 22 inches.

(iii) (a) *Grindwell Abrasives Ltd.*—At the time of the first inquiry into this industry held in 1946 the manufacture of grinding wheels was in the hands of Grindwell Ltd., a private limited company which had been operating since 1940. In accordance with a recommendation of the Tariff Board in 1946 it was decided to convert the Company into a public limited company, and the conversion was effected in 1950. An agreement was entered into in July 1950 between Grindwell Ltd. (the Vendor) and R. D. Sidhwa (Promoter) according to which a public limited company called Grindwell Abrasives Ltd. was formed subject to the acquisition by the latter of the business, machinery, plant, buildings, leases, rights, trade marks, goods, stores and stock-in-trade of the former as a going concern from 1st January 1950. The consideration for the sale was fixed at a total sum of Rs. 14 lakhs. As the capital of the new company (which was to be named Grindwell Abrasives Ltd.) was to be Rs. 25 lakhs and flotation without sanction from the Controller of Capital Issues was

possible only when the capital was limited to Rs. 5 lakhs, it was arranged that the shares of the nominal value of Rs. 4.76,000 would be transferred to the Vendors immediately after formation of the new company and the balance shares of the value of Rs. 9,24,000 would be transferred after sanction was obtained. The balance sheet at the end of 1949 was accepted as basis for the transaction subject to the exclusion of certain assets and liabilities which related to the Karachi business of the Vendor Company. At the time of the conversion the paid up capital of the Vendor Company was Rs. 2,38,119. The fixed assets at original value were Rs. 7,08,081 while the written down value was Rs. 3,85,740. The summary of the balance sheet of 31st December 1949 denotes a surplus of assets over liabilities of Rs. 1,98,060. As the consideration paid was Rs. 14 lakhs the balance of Rs. 12,01,940 was agreed to be the amount paid towards goodwill. In the balance sheets of Grindwell Abrasives Ltd. relating to the years 1950 to 1953 the above amount is shown as goodwill.

(b) Grindwell Abrasives Ltd. applied for sanction of the capital issue in 1950, but the sanction was actually granted only on 16th October 1954. At the present moment the authorised capital of the Company is Rs. 5 lakhs, and the paid up capital Rs. 4,99,200 consisting of 4,992 shares of Rs. 100 each. Steps are being taken to increase the authorised capital to Rs. 25 lakhs with corresponding increase in the number of shares. Of the Rs. 25 lakhs, Rs. 14 lakhs will be held by the Vendors. The Company is managed by the managing agency firm of Abra Co. who are entitled to 10 per cent. of the net annual profits as provided for in sub-section 3 of section 87(c) of the Indian Companies Act besides a fixed allowance of Rs. 2,000 per month.

(c) As Grindwell Ltd. and the successor Company of Grindwell Abrasives Ltd. have hitherto enjoyed a monopolistic position with regard to a wide range of grinding wheels since protection was granted in 1947 we examined their balance sheets during the last seven years to assess the effect of protection on their working. In the statement given below we have furnished certain figures and percentages obtained from an analysis of the balance sheets which disclose that the companies were able to build up an extremely satisfactory position for themselves.

Grindwell Ltd., 1947-1949—Grindwell Abrasives Ltd., 1950-53

Year	Capital employed	Sales turnover	Net profit (before deducting Capital income-tax)	No. 1	No. 2	No. 3	No. 4	Net profit as % to Capital employed	No. 5	Salaries and wages	No. 6	% of No. 2	Original block	Depreciation	Net profit (col. 3) as % of original block (col. 8)	No. 10
1947	•	•	635,400	1,199,900	101,900	16·04	8·49	355,000	29·59	506,134	39,281	20·1				
1948	•	•	699,700	1,317,500	147,800	21·12	11·22	458,700	34·82	575,088	41,700	25·7				
1949	•	•	815,600	1,822,600	173,500	21·27	9·52	613,200	33·64	707,981	57,522	24·5				
1950	•	•	823,500	1,665,700	133,900	16·26	8·04	638,300	38·32	720,331	49,339	18·6				
1951	•	•	907,200	2,237,700	150,900	16·63	6·74	753,000	33·65	775,635	50,589	19·5				
1952	•	•	1,122,000	2,720,000	177,000	15·78	6·50	879,700	32·34	919,171	70,414	19·3				
1953	•	•	1,263,700	2,587,800	211,000	16·70	8·15	864,300	33·40	947,725	62,048	22·3				

Notes.—(1) Grindwell Ltd., a private limited company, was converted into a public limited company as per sale deed dated 31-7-1950 on the basis of the former's balance sheet dated 31-12-1949.

(2) *Original block:* The figures relating to the years 1950 to 1953 represent the continuing original value of the block as taken over by Grindwell Abrasives Ltd. from Grindwell Ltd. These do not correspond to the figures given in the balance sheets of Grindwell Abrasives Ltd. who purchased the block from Grindwell Ltd. at the depreciated book value as on 31-12-1949. The difference by this adjustment amounted to Rs. 3,22,341.

(3) *Capital employed* has been determined by taking the net assets, comprising fixed and current assets used in the business (but not goodwill) and deducting therefrom current liabilities and provisions. In calculating net assets, the figures at the beginning and end of the years concerned at values shown in the balance sheets have been averaged.

The creation of intangible assets to the extent of 12,01,940 which has been passed on by Grindwell Abrasives Ltd. to the Vendors of Grindwell Ltd. as "goodwill" indicates that the profits in the latter's business even up to 1950 have been considerable. Taking the figures of the two companies as a whole from 1947 to 1953 we observe that the average percentage of net profits (before payment of income-tax) in relation to capital employed during the above years was 17·69, the average percentage in relation to sales turnover was 8·38, while that in relation to the original value of the block was 21·4. This last mentioned figure is more than twice that considered reasonable by the Tariff Board which provided for a return of 10 per cent. including managing agency commission, while the net profits on which the percentages have been calculated by us are after payment of such commission. The original value of the block as at the end of 1953 was Rs. 9,47,725 while the written down value was Rs. 3,93,090. The depreciation that the companies were able to provide were at rates higher than the normal rates permitted by the income-tax authorities. The dividend paid to shareholders from 1950 to 1953 were 9%, 12%, 10% and 6% respectively.

(d) In regard to equipment, the Company has made satisfactory progress since the last inquiry by the Tariff Board. They have mechanised their mixing department with special types of mixtures, and the mixing has been further improved by special vibrating screens. The stone dressing department has also been mechanised and a special dressing machine has been installed. Two new presses, three periodic kilns and dust-proof dressing lathes have also been installed. Two tunnel kilns have also been brought into operation, one of which is oil-fired and the other worked by electricity. These tunnel kilns make it possible to fire goods in shorter time, reduce labour and fuel costs and increase capacity considerably as they are capable of taking in wheels up to 12 inches diameter. A third large tunnel kiln, electrically worked, which is expected to be ready within the next six months will fire all wheels up to 24 inches in diameter and bring about a further reduction in costs and the period of delivery. Four new electric fire ovens have been erected to increase the manufacturing capacity of bakelite and resin bonded wheels by over 100 per cent. Two new hydraulic down stroke presses are on order, as also three dressing machines. An exhaust system for the dressing department which will go a long way in keeping the repairs to machines at a minimum is under construction. Consultations are on hand with engineers to instal a mono-rail conveyor system to reduce handling of the finished products to a minimum. The Company also intend purchasing large size accumulators for their presses to speed up production and improve the efficiency of their press department.

Rated capacity and production

6. (a) In 1951 the Tariff Board estimated the capacity of Grindwell's plant at 360 tons per annum. Mention was made in their report of two other units, *viz.*, Krishnalal Thirani & Co. (Calcutta), and Diamond Grind-Wheel Manufacturing Co., Bombay, which were expected to go into production within a year from then with capacities of 240 tons and 125 tons respectively. These expectations have not materialised. Krishnalal Thirani & Co. have been confining their business to the manufacture of coated abrasives only, and Diamond Grind-Wheel Manufacturing Co. are reported to have gone out of business.

(b) As the manufacture of grinding wheels is a continuous process depending on the capacity of the kilns employed, the capacity of a unit does not vary according to the number of shifts worked. The present capacity of Grindwell Abrasives Ltd. is stated to be 600 tons per annum. Steps have been taken for the erection of a third electric tunnel kiln which is expected to be ready by the middle of 1955, after which the capacity of the factory is expected to be 1,000 tons per annum. The capacity of Carborundum Universal Ltd. is stated to be 600 tons but this will be effective only after erection of the tunnel kiln about the end of 1955, till which time it would be only about 250 tons on the basis of the capacity of the periodic kiln in use. The capacity of General Abrasive Company is stated to be 120 tons per annum. The following statement would explain the position during the three stages referred to above :—

Name of the producer	Rated capacity (in tons)		
	First half of 1955	Second half of 1955	1956 onwards
Grindwell Abrasives Ltd.	600	1,000	1,000
Carborundum Universal Ltd.	Nil	250	600
General Abrasive Co.	120	120	120
TOTAL	720	1,370	1,720

(c) The actual production of grinding wheels by Grindwell Abrasives Ltd. has been as follows :—

1951	316 tons
1952	386 „
1953	360 „
1954 (January to October)	415 „

The above figures include stones, sticks, rubbing bricks, etc., which constitute 10 to 15 per cent. of the total tonnage. The Company stated that their production in 1954 was likely to exceed 500 tons.

Domestic demand

7. (a) At the time of the last inquiry into the industry by the Tariff Board the domestic demand for grinding wheels was estimated at between 450 to 500 tons per annum. The Planning Commission consider that as a result of the expansion of the engineering industries, the demand for grinding wheels would increase to about 750 tons by 1955-56. The Industrial Adviser, Development Wing, Ministry of Commerce and Industry, is of the opinion that the current demand is about 500 tons per annum. Grindwell Abrasives Ltd., the sole producers of grinding wheels at present, are of the view that the demand for the products is steadily increasing and that they are planning for a production of 1,000 tons in 1955.

(b) Imports of grinding wheels during 1952 and 1953 were about 119 tons and 66 tons respectively, but the former figure includes imports of non-protected categories also. Imports during the first-half of 1954 aggregate to 41·6 tons. The representatives of importing firms who were present at the public inquiry stated that they had been able to effect sales ahead of licences and that there were definite indications of a considerable spurt in demand. The representative of Grindwell Abrasives Ltd. who attended the inquiry stated that according to information received by them, imports during the second-half of 1954 were likely to be much in excess of those during the first-half and that supplies against a number of licences which had been issued were expected shortly. If the quantum of imports during 1954 is assumed to be 100 tons and domestic production 500 tons, the current demand would appear to be in the neighbourhood of 600 tons. Imports, however, are restricted by import control, and since deliveries by Grindwell Abrasives are often subject to long delays, the demand for their grinding wheels cannot be measured by their actual production. There has been a marked increase in the demand for grinding wheels of late and we consider that the current demand is probably 750 to 800 tons. As regards future demand, Grindwell Abrasives, as stated above, are planning for a production of 1,000 tons in 1955. Several large engineering establishments and factories using grinding wheels are expected to go into production during the next few years, and as the demand for fresh grinding wheels to replace original equipment and spares accompanying new machinery usually arises only two or three years after the installation of new machinery the replacement demand for grinding wheels is likely to expand considerably in course of time. If the present tempo of industrial activity is maintained and accelerated, we consider it very likely that the demand for grinding wheels may increase progressively from year to year to anything up to 1,500 tons at the end of the next five years.

Raw materials

3. (a) The principal raw materials used in the manufacture of grinding wheels are :

- (1) Abrasive grains
- (2) Bonding materials
 - (a) vitrified
 - (b) elastic
 - (c) mineral
- (3) Dextrin
- (4) Sulphite
- (5) Silicate of soda
- (6) Oxychloride
- (7) Fibre glass discs
- (8) Oils
- (9) Lead
- (10) Fibre bushes
- (11) Silver steel spindle.

(b) Abrasive grains, elastic bonding material, sulphite and fibre glass discs are imported ; the value of these imported materials is a little above 80 per cent. of the total cost of raw materials while

the value of abrasive grains alone is about 73 per cent. We are informed that there are no plans in the country for the manufacture of synthetic abrasive grains which requires a plentiful supply of electric power at very cheap rates. The Punjab Government were at one time investigating the possibility of setting up a plant in the area served by the Bhakra Nangal Hydro-electric project but no information is available about the progress made by them in this direction.

(c) The import of abrasive grains is permitted free of duty. The duty on the other imported articles ranges from $3\frac{1}{4}$ per cent. to $37\frac{1}{2}$ per cent. *ad valorem*.

Quality of the indigenous product

9. (a) We have received some complaints to the effect that indigenous grinding wheels have a much shorter life as compared to imported wheels (particularly among larger sizes) and that they lack consistency in hardness. The Director General of Ordnance Factories has advised us that the materials used in indigenous wheels become hot and charred in spite of normal water feed, that the wheels are soft and have shorter life, and that the standard of production is not uniform. The Controller of Stores of the Western Railway has complained that the wear is excessive and frequent renewals become necessary. A somewhat similar complaint has been made by the Bhartia Electric Steel Co. Ltd. of Calcutta and National Machinery Manufacturers Ltd. of Thana (Bombay State). This latter firm have also stated that while the quality is fairly comparable to that of imported wheels, dressing is more frequently needed and this results in shortening the life of wheels. The Indian Tool Manufacturers Ltd., Bombay, have stated that the quality of the wheels is not consistent, and the Metal Box Co. of India Ltd. have advised us that while indigenous wheels are reasonably satisfactory for general work they are not up to the standard required for precision grinding. They add that wheels of the same specifications produce different results, that the degree of hardness varies during the section of a particular wheel which leads to unequal wear on the periphery. A number of complaints have also been received about the distribution system of the Company, long delays in delivery and inadequate after-sales service. As against these complaints which have been received by us directly, the manufacturers have supplied us with considerable evidence in the form of letters received by them commending the satisfactory performance of their wheels. These letters are from Works Managers of Government Ordnance Factories, Engineers and Controllers of Stores of Railways, Burn & Co. Ltd., the National Bearing Co. Ltd., Jaipur, India Pistons Ltd., Madras, National Razors and Blades Ltd., Calcutta, and Chittaranjan Locomotive Works, Calcutta. The Development Wing of the Ministry of Commerce and Industry have advised us that the quality of indigenous wheels is satisfactory and that a few complaints regarding wheels supplied in individual cases were found to be due to improper selection of grinding wheels or improper manner of usage. The Director General of Supplies and Disposals has also advised us that no complaints have been received by him from the consumers in his list.

(b) The question of quality was discussed at the public inquiry and also with the producers. After consideration of the evidence received and the explanations tendered by the producers, we are of

opinion that so far as the standard types of grinding wheels are concerned the indigenous product is equal in quality to the imported product, and that most of the complaints enumerated above relate to wheels manufactured by Grindwell Abrasives Ltd. against fresh specifications and to the initial samples of such wheels. The Company has stated that certain initial difficulties are inherent in the manufacture of substitutes for wheels imported along with machinery, and that this is true even of well known foreign producers. In most cases what the domestic producer is called upon to do is to duplicate the original wheel not merely with regard to the specifications but also in such a way as to ensure the same performance as the original. After inspection of a sample the manufacturer has to choose the special type of synthetic abrasive grain required, the special bonding material required and the structure base of the wheel. In synthetic abrasive grains which consist of two basically and chemically different groups, *viz.*, electrundum and carborundum grains there exist wide ranges of qualities which are achieved by a careful selection of the raw materials and the melting processes. As chemical analysis is no criterion to judge the suitability of a particular abrasive grain for a specified type of wheel, it is possible to select the right type of grain only if consumers furnish full details of their requirements. In bonding material there are a variety of types such as vitrified bonds, resinoid bonds, silicate bonds, rubber bonds and mineral bonds. Grindwell Abrasives Ltd. manufacture more than one dozen different types of bonds in the group of vitrified bonds alone, and in the other groups also there are many varieties. The structure of a grinding wheel denotes the correct distribution of grain, bond and air pores and as a rule there are one dozen main structures. As the manufacturer has to blend more than one dozen grain varieties, more than one dozen bond varieties and one dozen structure varieties in addition to two dozen mesh or sieving numbers of the abrasive grains there would appear to be more than 40,000 variations of qualities in each size of grinding wheels. We are informed that printed questionnaires are invariably sent to consumers to fill in working conditions and other particulars and the selection of the type required has then to be proceeded with by the manufacturer on the basis of answers received. Most of the large consumers have been visited by the Company's technicians and charts and drawings have been prepared on the basis of the data collected. The execution of orders depends on a large number of variable factors and it would therefore seem that the producers alone cannot be held responsible for lack of consistency or poor performance.

(c) It was admitted by the producers that certain specialised types of wheels such as those required for honing razor blades have not yet been perfected by them. They are, however, experimenting in the manufacture of these specialised types and also wheels required for precision grinding and expect to succeed in their efforts shortly.

(d) As regards delays in deliveries the manufacturers pointed out that in most cases delays were due to manufacturing bottle-necks which were not appreciated by the consumers. Most average grinding wheels require approximately 60 days for manufacture and dressing. The period may have to be extended if the kilns were already full with other current production. Most of these delays are, however, expected to be eliminated after the erection of the large tunnel kiln which may be completed within three months. The Company have represented to us that as they had to meet the entire demand of

the country for a wide range of wheels it happened that consumers who did not plan their orders properly and required their execution at short notice often felt dissatisfied with the delivery dates quoted by the Company.

(e) After careful consideration of the evidence received by us we have come to the conclusion that Grindwell Abrasives Ltd. have made commendable efforts to improve quality and eliminate complaints. It will be to the Company's lasting interests to continue their efforts in both directions unremittingly. The dissatisfaction expressed by certain consumers of grinding wheels is understandable as it is manifestly impossible for one unit to cater to the varied demands for grinding wheels in the entire country and also ensure speedy delivery and effective service. We expect, however, that the position will be greatly improved within a short time, say about the middle of 1955 when the new unit, namely, Carborundum Universal Ltd. goes into production.

(f) The Indian Standards Institution have advised us in their letter dated 14th April 1954 that the draft marking system for grinding wheels has been finalised, that preliminary work is in progress on the preparation of standard specifications of sizes and shapes and it is likely that the standard will be published by the end of 1955. We recommend that the Institution should expedite this work.

Existing rate of duty

10. Grinding wheels and segments are at present assessed to duty under items Nos. 71(8) and 71(12) of the Indian Customs Tariff Schedule (thirty-ninth issue). The relevant extract of the Schedule is given below :

Item No.	Name of article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of				Duration of protective rates of duty
				the U.K.	a British Colony	Burma		
71(8)	Grinding wheels and segments made of synthetic abrasive grains, excluding the following, namely :— (i) Grinding wheels (a) of any thickness or bore but more than 2½" in diameter, or (b) of any diameter or bore but more than 7½" or less than 1/8" thickness, or (c) of any diameter or thickness but more than 12½" bore; and (ii) Diamond impregnated wheels.	Protective.	52½ per cent. ad. val.	..	..	..	..	December 31st, 1954*
71(12)	Grinding wheels and segments made of synthetic abrasive grains, not otherwise specified.	Revenue.	31½ per cent. ad. val.	..	..	..	..	..

* The duration has been extended to 31 December 1955 by the Indian Tariff (Third Amendment) Act of 1954.

Import control policy and imports

11. (a) The import control policy in respect of grinding wheels and segments since January-June 1951 is described below :

January-June 1951.—Established importers were allowed to import grinding wheels and segments on a quota basis of 25 per cent. of one-half of their best year's imports.

July-December 1951.—The quota for established importers was the same as for January-June, 1951. Diamond lapping wheels or grinding wheels impregnated with diamond dust were allowed to be imported freely by established importers and actual users.

January-June 1952.—Established importers were given a quota of 25 per cent. of one-half of their best year's imports.

July-December 1952.—The quota for established importers was reduced to 16 per cent. of one-half of their best year's imports with the stipulation that not more than 50 per cent. of the face value of the licences could be utilised for the imports of the following types of grinding wheels :

- (i) less than 21" diameter,
- (ii) more than $\frac{1}{2}$ " and less than $7\frac{1}{2}$ " thickness,
- (iii) less than $12\frac{1}{2}$ " bore.

Diamond lapping wheels or grinding wheels impregnated with diamond dust were placed on O.G.L. for imports from soft currency areas. No other types of grinding wheels were allowed to be imported.

January-June 1953; July-December 1953; January-June 1954; July-December 1954.—The policy followed during these four licensing periods was the same as that in July-December 1952 except that actual users also were granted licences. By an amendment dated 16th October 1954 Government notified that the range of thickness specified in type (ii) above should be altered to "more than $\frac{1}{2}$ " and less than $7\frac{1}{2}$ " thickness."

(b) Imports of grinding wheels during the last two years were as follows :

1952	tons	119.4	(includes imports of non-protected categories).
1953	tons	65.6	
1954	tons	41.6	(January-July)

Most of the imports were from the United Kingdom.

Commission's estimate of cost of production and fair selling prices

12. (a) The cost of production of grinding wheels at the factory of Messrs. Grindwell Abrasives Ltd. has been examined by the Cost Accounts Officer attached to the Commission. The Company produces numerous varieties of grinding wheels, segments, stones, sticks and abrasive compounds and do not maintain adequate cost data to

enable the costs of each type and size to be determined. Determination of the cost of production of each individual product according to type, shape and size would involve excessive labour and time and had, therefore, to be given up. For the purpose of this investigation it was considered sufficient to work out the actual costs of manufacture of certain representative sizes of grinding wheels as was done by the Tariff Board during the previous inquiries. During these inquiries three sizes of plain wheels, *viz.*, $10'' \times 1'' \times 1''$, $12'' \times 1'' \times 1''$ and $12'' \times 2'' \times 1''$ were taken to be representative of the entire range of the Company's products. After a scrutiny of the statistics of production and sales maintained by the Company, we have also decided to take the same three sizes as being the most representative among the Company's total manufacture. While, however, the Tariff Board in 1951 determined the cost of production of a representative size, say, $12'' \times 1''$ or $12'' \times 2''$ of a plain wheel after multiplying its weight in lb. by the overall average cost per lb. (*i.e.*, the total cost of production divided by the total output in lb.) at this inquiry we have tried to determine separately the cost of production of each representative size in each of the six types produced. The assumption in the former case was that the sizes selected were so representative of the total production of the firm that their cost would approximately correspond to the overall average cost. This assumption has been given up as it involved a number of doubtful assumptions regarding consumption of raw materials and conversion charges.

(b) The actual costs for the year 1953 as well as the future estimates of costs have been worked out for the above three sizes only. These costs reveal that the cost per pound for each type of wheel increases as the size decreases as a result of proportionately higher consumption of raw materials, higher cost of pressing and dressing charges and overheads. This is also borne out by the schedule of international prices. There is a broad similarity in this respect between the structure of costs determined by the Cost Accounts Officer and that of international prices, although the variations in prices between different types and sizes are not exactly of the same magnitude or in the same proportion in the figures worked out by the Cost Accounts Officer as in the international price schedule. We are, however, satisfied that the differences are not of any material significance and, in any event, are not such as to vitiate our final conclusions regarding the quantum of protection required by the industry.

(c) For the purpose of this inquiry and for estimating the disadvantage of indigenous producers in competing with foreign grinding wheels, we have considered it necessary to add to the ex-works cost of production (i) the cost of transporting the finished product from the factory at Uran to Bombay and (ii) the railway freight charges for 600 miles (which is approximately half of the distance between Bombay and Calcutta) on 130 per cent. of the net weight of the product which is the estimated packed weight. The former is necessary to place the cost of the indigenous product on par with the landed cost of the imported product at Bombay, and the latter to compensate the domestic industry for its freight disadvantage in competing with the imported product at various consuming centres throughout the country from a single producing centre, *viz.*, Bombay. In Appendix III we have furnished the actual f.o.r. Bombay prices

for 1953 together with the railway freight disadvantage. In Appendix IV will be found similar figures of estimated prices for the future which have been based on the following factors :

(i) *Production.*—The average production of the Company during the next three years has been estimated in agreement with the Company at 700 tons per annum.

(ii) *Raw materials.*—The exact weight of raw materials required for the manufacture of each wheel and the details of the recipe are recorded by the Company on work order cards. The costs have been worked out after taking into account the actual issues and wastages and not on an assumed ratio as at the last inquiry.

(iii) *Labour and establishment.*—As against a total of 473 workers in 1951, the number employed in 1953 was only 432. But in expectation of the new tunnel kiln going into operation in 1955 and for dealing with increased all-round production, the labour force has been increased to 669. No further addition is contemplated but the Company has entered into an agreement with the workers to increase their pay to certain standards and grant them regular annual increments, gratuity and certain amenities and this will entail some increase in labour costs. As regards salaries, the number of salaried employees has not increased as much as that of the workers, but there has been an increase in emoluments in 1954 as compared to 1953. Despite these increases the costs per unit under these two heads show reductions of 17·5 per cent. and 28 per cent. respectively as compared with actuals for 1953 owing to the increased output assumed by us. We have provided for some expansion of the technical and administrative staff to cope with the increase in production, but despite this provision, the cost per unit under the head of factory establishment has remained constant while that under the head of administrative establishment has declined by 41 per cent. as compared with the actuals for 1953.

(iv) *Depreciation.*—With the anticipated increase in block of about Rs. 6 lakhs the incidence of depreciation on the future costs is estimated to increase by about 9·5 per cent. over the actual costs for 1953. Depreciation has been calculated at income-tax rates on the written down value of the assets.

(v) *Other overheads.*—Substantial increases under rent, taxes and insurance are expected and have been provided for in the future estimates. Despite these increases, the incidence of costs under this head is lower by 36 per cent. as compared with actuals owing to the estimated increase in output.

(vi) *Interest on working capital.*—Production of grinding wheels is undertaken, almost as a rule, on receipt of orders from customers. The Company has not yet been able to make arrangements to meet orders ex-stock as recommended by the Tariff Board in 1951. The Company's representatives admitted at the public inquiry that, as a rule, they obtained a 25 per cent. deposit against orders from all indentors except Government. Orders take, on an average, about 8 to 12 weeks' time to complete. In the circumstances, we consider it sufficient to provide for working capital equal to three month's cost of production and to allow interest thereon at 4½ per cent. per annum.

(vii) *Return on block.*—Return on block has been allowed at 10 per cent. on the value of the gross block as at 31st December 1953, viz., Rs. 9,47,725 plus projected additions thereto to the extent of

Rs. 6 lakhs. The gross block has been worked out on the basis of the original value as it stood in the books of the Vendor Company together with subsequent additions thereto. This is in consonance with the basis adopted by the Tariff Board in 1951 with which we agree.

(viii) *Faced and shaped wheels.*—The Company claimed that the extra costs for facing and shaping certain types of wheels should be spread over all the wheels manufactured on the ground that according to international practice, faced and shaped wheels have to be sold at the same prices as the corresponding straight wheels. It was observed that in the case of faced wheels, while facing involved extra cost, there was no saving in any other direction. The same was the case with many of the shaped wheels. In the case of certain types of shaped wheels, when there is appreciable saving in raw materials, a concession is given in the price, in accordance with international practice. It was, therefore, agreed that the extra costs involved in facing or shaping wheels should be absorbed in the costs of all wheels.

(ix) The statements in Appendices III and IV give estimates of the cost of production (actual and future) per wheel of each selected size among the six types produced. The weight of each wheel has also been given in Appendix III and the cost per pound indicated in each case to illustrate the observations made by us in paragraph 12(b).

(d) Our estimates of the future fair f. o. r. Bombay prices including the allowances for freight disadvantage for the types and sizes of grinding wheels selected by us are as follows :—

	10" × 1" × 1"	12" × 1" × 1"	12" × 2" × 1"
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Electrundum vitrified . . .	15 3 11	20 5 6	36 5 11
Electrundum vitrified white . . .	16 5 5	21 12 3	38 4 4
Electrundum E Elastic bonded . . .	20 0 7	.. ..	47 6 10
Carborundum vitrified . . .	16 7 2	22 8 2	38 15 5
Carborundum Green Grit vitrified . . .	16 13 11	22 2 9	41 2 10
Carborundum Elastic bonded . . .	.. ..	25 0 0	.. ..

Messrs. Grindwell Abrasives Ltd. desire that the details of their cost of production should be kept confidential and hence such details are being forwarded to Government in a separate enclosure to this report and only the totals under the main heads are given in Appendices III and IV.

C. i. f. prices and landed costs of imported grinding wheels

13. The statement in Appendix V gives the data regarding the c. i. f. prices and landed costs of the three representative sizes of grinding wheels as furnished by the Collectors of Customs and certain leading importing firms. The data furnished by the Collectors of Customs do not indicate the types of the products imported. The

data received from the importing firms, however, contain information for certain types of imported wheels which correspond to indigenous wheels. The items selected by us which have been marked with asterisks in Appendix V are as follows :

Importing firm	Name of product	Importer's trade name
Scott & Pickstock Ltd.	Electrundum Vitrified.	Bauxilite
Do.	Electrundum "V" White Vitrified.	White bauxilite.
Do.	Carborundum Vitrified	Unirundum.
Do.	Carborundum Green Grit Vitrified.	Do.
Alfred Herbert (India) Ltd.	Electrundum "E" Elastic bonded.	Alundum Resinoid.
Do.	Carborundum Elastic bonded.	Crystolon Resinoid.

The c. i. f. prices of the above wheels are as under :—

	10" × 1" × 1"	12" × 1" × 1"	12" × 2" × 1"
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Electrundum vitrified	11 14 9	16 6 9	29 5 3
Electrundum "V" White vitrified	12 6 0	17 1 0	30 8 0
Electrundum E Elastic bonded	12 9 3	..	30 15 0
Carborundum vitrified	13 6 0	18 6 3	32 12 6
Carborundum Green Grit vitrified	13 6 0	18 6 3	32 12 6
Carborundum Elastic bonded	..	19 12 0	..

Measure of protection

14. The indigenous industry suffers from a competitive disadvantage in so far as the fair f.o.r. Bombay prices (including freight disadvantage) of different types and sizes of its wheels exceed the landed costs ex-duty of the corresponding types and sizes of imported wheels. The quantum of protection required by the indigenous industry is measured by the percentages which the differences between the fair f. o. r. Bombay prices (including freight disadvantage) and landed costs ex-duty bear to the c. i. f. prices. The detailed comparison and the percentages arrived at are given in the statement in Appendix VI. Since the three sizes 10" × 1" × 1", 12" × 1" × 1"

and $12'' \times 2'' \times 1''$ are, more or less, of equal importance, we consider it reasonable to adopt a straight average of the percentages indicated for them for each type. The different types of wheels, however, are not of the same relative importance, and hence the average percentage indicated for the various types have to be suitably weighted. We have weighted them on the basis of the total tonnages of different types actually sold by the Company in 1953. The statement below shows the percentages (taken from Appendix VI), the straight averages for each type, the weights applied, and the final weighted average of the disadvantage suffered by the industry.

	Percentage of disadvantage			Straight average of disadvantage %	Weights applied %	Total weighted average of disadvantage
	10×1×1	12×1×1	12×2×1			
1. Electrundum vitrified	25.25	21.22	21.88	22.78	75.80	
2. Electrundum "V" White vitrified	29.50	25.00	23.43	25.98	3.70	
3. Electrundum "E" Elastic bonded.	56.81	..	50.79	53.80	10.30	25.86%
4. Carborundum vitrified.	20.64	20.02	16.95	19.20	7.10	
5. Carborundum Green Grit vitrified.	23.79	18.18	23.70	21.89	0.90	
6. Carborundum Elastic bonded.	..	24.08	..	24.08	2.20	

On the above basis, the average quantum of protection required by the industry works out to 25.86 per cent. We consider, however, that having regard to the need for providing some incentive to the indigenous industry to reduce its cost of production a protective duty of 25 per cent. *ad valorem* would adequately meet the requirements of this case.

Changes in the tariff schedule

15. We recommend that the protective duty on grinding wheels and segments of all kinds other than those which, as stated in paragraph 4(b) are to be excluded from the scheme of protection, should be reduced from the existing rate of 50 per cent. *ad valorem* exclusive of surcharge to 25 per cent. *ad valorem including surcharge*. We recommend further, that the industry should continue to receive protection till 31st December, 1957. The general revenue duty on the excluded varieties of grinding wheels may also be reduced to 25 per cent. *ad valorem including surcharge* to afford the same measure of relief to the consumers of these varieties as would be obtained by the consumers of the protected types. If these recommendations are

accepted by Government, items 71(8) and 71(12) of the First Schedule to the Indian Customs Tariff may be amended to read as follows :

Item No.	Name of the article	Nature of duty	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of			Duration of protective rates of duty
				the U.K.	a British colony	Burma	
71(8)	Grinding wheels and segments made of synthetic abrasive grains excluding the following, namely,	Protective.	25 per cent. <i>ad. val.</i>			..	December 31st, 1957.
	(i) Grinding wheels :						
	(a) of any thickness or bore but more than 24" in diameter.						
	(b) of any diameter or bore but more than 9 inches or less than 1/32 inch in thickness.						
	(ii) Diamond impregnated wheels.						
71(12)	Grinding wheels and segments made of synthetic abrasive grains, not otherwise specified.	Revenue.	25 per cent. <i>ad. val.</i>			..	..

Duty on synthetic abrasive grains

16. We have stated in paragraph 8(b) that on account of the non-availability of adequate supply of electric power at cheap rates the manufacture of synthetic abrasive grains is not likely to be established in the country in the near future. We, therefore, recommend that the concession at present enjoyed by the industry by way of duty free imports of synthetic abrasive grains should be continued during the period of protection.

Future development of the industry

17. (a) The industry has enjoyed protection during the past seven years, through import restrictions, and also through protective duties which were 50 per cent. exclusive of surcharge from May 1947 to December 1948, 80 per cent. from December 1948 to May 1949, 100 per cent. inclusive of surcharge from May 1949 to May 1952, and 50 per cent. exclusive of surcharge from May 1952. That the above-mentioned protective duties rendered substantial protection to the industry is proved by the very considerable financial benefits that have accrued to the sole producing unit *viz.*, Grindwells Ltd. (and their successors Grindwell Abrasives, Ltd.) as described in paragraph 5(iii) of this report. We observe, however, that consumers have not had a fair share of these benefits in that no reduction in the prices of grinding wheels has been effected during the entire period of protection; on the other hand, the prices were increased. The very

comfortable monopolistic position enjoyed by the Company as a result of the ample quantum of protection granted to them has left them with no incentive to reduce their selling prices throughout the period of protection, except for the institution in 1953 of a bonus scheme for regular dealers based on annual turnover. We are, therefore, satisfied that the scaling down of the protective duty in the manner recommended by us, will not adversely affect the development of the indigenous industry but will result in the selling prices of indigenous grinding wheels being lowered. The consequential benefit to the expanding engineering industries will be appreciable. We are also satisfied that the reduction in duty will not create any difficulty for the new venture that is being established at Madras, viz., Carborundum Universal Ltd. as they enjoy a high reputation as producers of quality wheels and are in possession of the know-how for the most up-to-date processes of manufacture. Their costs should, in our view, be not higher than those of Grindwell Abrasives, Ltd. There is bound to be a continuing and progressively expanding demand for grinding wheels in the country as a result of the large expansions which have been planned in the engineering, machine manufacturing and tool making industries. The projected expansion of the grinding wheels industry will ensure self-sufficiency in respect of this essential article of industrial use and will also foster healthy internal competition.

(b) We recommend that Grindwell Abrasives, Ltd. should continue their efforts to bring down their costs of production by concentrating on the most economical range of products. They should also take note of the complaints regarding the new types of wheels manufactured by them and should take steps to organise an improved after sales service, and to eliminate delays in executing orders.

(c) The Company has requested that imports of grinding wheels should be gradually discontinued except for certain special types not manufactured in the country. We, however, consider that the present import control policy has worked satisfactorily.

Summary of conclusions and recommendations

18. Our main conclusions and recommendations may be summarised as under :

1. The following types and sizes of grinding wheels should be excluded from the scheme of protection :

- (i) Grinding wheels having (a) more than 24 inches diameter and (b) less than 1/32 inch or more than 9 inches in thickness.
- (ii) Diamond impregnated wheels.

[Paragraph 4(b).]

2. The present rated capacity of Grindwell Abrasives, Ltd. is 600 tons per annum. With the coming into production of two more factories in 1955, the rated capacity of the industry is expected to be 720 tons in the first half of 1955, 1370 tons in the second half of 1955, and 1720 tons from 1956 onwards.

[Paragraph 6(b).]

3. The demand for grinding wheels is likely to increase progressively from year to year to anything up to 1,500 tons at the end of the next five years.

[Paragraph 7(b).]

4. The Indian Standards Institution should be requested to expedite the formulation of standard specifications for grinding wheels.

[Paragraph 9(f).]

5. The protective duty on grinding wheels and segments of all kinds other than those to be excluded from the scheme of protection should be reduced from 50 per cent. *ad valorem* exclusive of surcharge, to 25 per cent. *ad valorem* including surcharge. The protective duty should remain in force till 31st December, 1957.

[Paragraph 15.]

6. The varieties of grinding wheels excluded from the scheme of protection should be subject to a revenue duty of 25 per cent. *ad valorem* including surcharge.

[Paragraph 15.]

7. Items 71(8) and 71(12) of the First Schedule to the Indian Customs Tariff should be amended as indicated in paragraph 15.

[Paragraph 15.]

8. The concession of duty free imports of synthetic abrasive grains should be continued during the period of protection.

[Paragraph 16.]

9. Grindwell Abrasives, Ltd. should bring down their cost of production of grinding wheels, concentrate their efforts on the production of the most economical range of products and provide an improved after sales service to consumers.

[Paragraph 17(b).]

Acknowledgements

19. We wish to thank the representatives of producers, consumers and importers of grinding wheels as well as those of the various Government departments concerned for their co-operation in carrying out this inquiry.

B. N. ADARKAR, Member.

B. N. DAS GUPTA, Member.

C. RAMASUBBAN, Member.

RAMA VARMA, Secretary.

BOMBAY,

18th February, 1955.

APPENDIX I

(*Vide* Paragraph 3)

List of persons or bodies to whom the Commission's questionnaires were issued and from whom replies or memoranda were received.

A. PRODUCERS

- *1. Carborundum Universal Ltd., 106, Armenian Street, Madras.
- *2. General Abrasive Company, Patel Estate, Goregaon East, Bombay Suburb.
- *3. Grindwell Abrasives Ltd., Post Box No. 78, Bombay 1.
- 4. Krishnalal Thirani & Co., 8, Royal Exchange Place, Calcutta.

B. IMPORTERS

- *1. Alfred Herbert (India) Ltd., Kaiser-I-Hind Building, Ballard Estate, Bombay 1.
- *2. Bashimal Thirathram, 74, Bhajipala Lane, Bombay 3.
- 3. Bashimal Kanhyalall, 124, Narayan Dhuru Street, Bombay 3.
- 4. Batliboi & Co., Bharat House, Apollo Street, Bombay 1.
- 5. G. Vithaldas & Co., 42, Nagdevi Cross Lane, Bombay 3.
- *6. Hakimji Lookmanji, C.P. Tank Road, Bombay 4.
- 7. H. S. Cox & Co. Ltd., 24, Rampart Row, Post Box No. 427, Bombay 1.
- 8. Jairamdas & Sons, 163, Narayan Dhuru Street, Bombay 3.
- 9. Martin Burn & Co. Ltd., 12, Mission Row, Calcutta.
- 10. Santaram Biasdev Co., 6, Narayan Dhuru Street, Bombay 3.
- *11. Scott & Pickstock Ltd., 2, Clive Ghat Street, Calcutta.
- 12. Tirataram Kashmirilal, 89, Nagdevi Cross Lane, Bombay 3.
- 13. Tirathdas Keshoram, 130, Narayan Dhuru Street, Bombay 3.
- 14. William Jacks & Co. Ltd., Post Box No. 369, Calcutta.

C. CONSUMERS

- *1. Bhartia Electric Steel Co. Ltd., 42, Shitalla Street, Calcutta.
- 2. Binani Metal Works Ltd., Binani Building, Strand Road, Calcutta 1.
- 3. Bombay Too' Supplying Agency, 50, Nagdevi Cross Road, Bombay 3.
- 4. Cooper Engineering Ltd., Satara Road, District Satara, Bombay State.
- *5. Director General of Ordnance Factories, Calcutta.
- *6. Godrej & Boyce Mfg. Co. Ltd., Lalbaug, Parel, Bombay.
- *7. Gresham & Craven of India Ltd., 22, Gobra Road, Calcutta 14.
- 8. Hind Razor & Blade Co., Industrial Assurance Bldg., Opp. Churchgate, Bombay 1.
- *9. Indian Jute Mills' Association, Royal Exchange, Post Box No. 280, Calcutta.
- 10. Kantilal Bhogilal & Co. Ltd., 68, Nagdevi Cross Lane, Bombay.

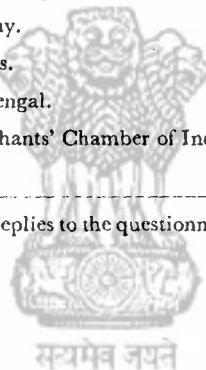
* Those who have sent detailed replies to the questionnaire or sent memoranda.

- *11. Kumardhubi Engineering Works Ltd., Kumardhubi, P. O. Dist. Manbhumi, Bihar.
- 12. Mazagaon Dock Ltd., Mazagaon, Bombay 10.
- *13. National Machinery Manufacturers Ltd., Thana, Bombay.
- *14. The Metal Box Co. of India Ltd., Chowringhee, Calcutta 20.
- 15. The Bombay Dyeing & Mfg. Co. Ltd., Neville House, Ballard Estate, Bombay 1.
- *16. The Controller of Stores, Central Railway, V.T., Bombay.
- *17. The Controller of Stores, Western Railway, Mahaluxmi, Bombay.
- 18. The Engineering Association of India, 23-B, Netaji Subhas Road, Calcutta.
- *19. The Indian Tool Mfrs. Ltd., 101, Sion Road, Bombay 22.
- *20. Tata Iron and Steel Co. Ltd., Bombay House, Bruce Street, Bombay 1.
- 21. The Railway Board (The Railway Liaison Officer), Block No. 1, Shahjahan Road, New Delhi.

D. GOVERNMENT DEPARTMENTS AND OTHERS

- *1. Industrial Adviser (Engineering), Development Wing, Ministry of Commerce & Industry, New Delhi.
- *2. Director General of Supplies & Disposals, New Delhi.
- *3. Director of Industries, Bombay.
- 4. Director of Industries, Madras.
- 5. Director of Industries, West Bengal.
- 6. Iron, Steel & Hardware Merchants' Chamber of India, 'Steel Chambers' 153, Narayan Dhuru Street, Bombay 3.

*Those who have sent detailed replies to the questionnaire or sent memoranda.

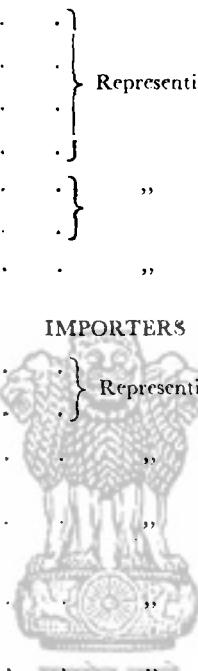


APPENDIX II

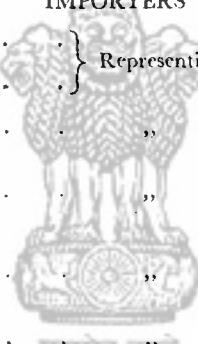
(Vide paragraph 3)

*List of persons who attended the public inquiry on 21st October, 1954.
and gave evidence.*

PRODUCERS

1. Shri R. D. Sidhwa	 Representing	M/s. Grindwell Abrasives Ltd., P. O. Box No. 78, Bombay.
2. „ F. D. Lima		
3. „ N. D. Sidhwa		
4. „ J. M. Tijoriwala		
5. „ A. M. M. Arunachalam		
6. „ R. H. Iyer		
7. „ V. S. Patel		

IMPORTERS

8. „ L. W. Leaf	 Representing	William Jacks & Co. Ltd., Hamilton House, Ballard Estate, Bombay-1.
9. „ T. Chandumal		
10. „ L. Parr		
11. „ R. C. Bromley		
12. „ S. V. Parekh		
13. „ F. A. Jasdanwalla		

CONSUMERS

14. „ K. G. Kale	 Representing	Hind Razor & Blade Co. Ltd., Industrial Assurance Bldg., Bombay-1.
15. „ K. B. Sethana		

GOVERNMENT OFFICIALS

16. Shri V. L. N. Row	 Representing	Machine Tool Factory, Amravati. Deputy Director of Inspection, Bombay.
17. „ J. M. Marathe		
18. „ N. M. Shah		
19. „ N. C. Killawala		
20. „ K. B. Vaghkar		

APPENDIX

[Vide Para

*Statement showing the ex-works costs and fair f. o. r. Bombay
produced by M/s. Grindwell Abrasives*

Size in inches	Electrundum Vitrified			Electrundum 'V' Vitrified white			Electrundum	
	10×1×1	12×1×1	12×2×1	10×1×1	12×1×1	12×2×1	10×1×1	
Weight of wheel	6 lbs. 12 ozs.	9 lbs. 3 ozs.	19 lbs.	6 lbs. 9 ozs.	8 lbs. 2 ozs.	16 lbs. 4 ozs.	7 lbs. 1 ozs.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Cost per wheel.</i>								
1. Net Materials	6·046	8·704	15·617	8·121	11·415	20·846	10·189	
2. Conversion charges	8·882	11·001	19·189	8·305	10·279	16·973	9·267	
	14·928	19·705	34·806	16·426	21·694	37·819	19·456	
3. Packing and despatching charges to f.o.r. Bombay.	0·970	1·366	2·731	0·862	1·231	2·318	1·042	
4. Interest on working capital.	0·175	0·232	0·414	0·190	0·253	0·444	0·226	
5. Return on block . . .	0·785	1·106	2·211	0·698	0·996	1·876	0·844	
6. Fair f. o. r. Bombay price per piece.	16·858	22·409	40·162	18·176	24·174	42·457	21·568	
7. Freight disadvantage . .	0·257	0·361	0·722	0·228	0·325	0·613	0·276	
8. Fair f.o.r. Bombay price cum freight disadvantage.	17·115	22·770	40·884	18·404	24·499	43·070	21·844	
9. Fair f.o.r. Bombay price per lb. (exclusive of freight disadvantage).	2·497	2·359	2·114	3·029	2·823	2·633	2·975	

III

graph 12(c).]

price (with freight disadvantage) of Grinding Wheels

Ltd., Bombay, for the year 1953.

'E' Elastic		Carborundum Vitrified		Carborundum Green Vitrified		Carborundum Elas. bonded	
12×2×1	10×1×1	12×1×1	12×2×1	10×1×1	12×1×1	12×2×1	12×1×1
20 lbs. 4 ozs.	6 lbs. 10 ozs.	8 lbs. 10 ozs.	16 lbs. 6 ozs.	5 lbs. 6 ozs.	7 lbs. 10 ozs.	14 lbs. 4 ozs.	8 lbs. 9 ozs.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
25.108	7.321	11.501	20.273	8.881	12.188	24.470	13.759
20.151	8.305	10.327	17.166	7.823	9.556	15.529	10.278
45.259	16.126	21.828	37.439	16.704	21.704	39.999	24.037
2.911	0.862	1.240	2.354	0.773	1.096	2.048	1.231
0.533	0.187	0.255	0.440	0.193	0.252	0.466	0.279
2.356	0.698	1.004	1.906	0.625	0.887	1.658	0.996
51.059	17.873	24.327	42.139	18.295	23.979	44.171	26.543
0.770	0.228	0.328	0.622	0.204	0.290	0.542	0.325
51.829	18.101	24.655	42.761	18.499	24.269	44.713	26.868
2.521	2.979	2.821	2.573	3.404	3.145	3.100	3.100

APPENDIX

[Vide Para

*Statement showing the estimated future costs and fair f. o. r. Bombay
produced by M/s. Grindwell*

Size in inches	Electrundum Vitrified			Electrundum 'V' Vitrified white		
	10×1×1	12×1×1	12×2×1	10×1×1	12×1×1	12×2×1
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<i>Cost per wheel :</i>						
1. Net materials . . .	6·403	9·200	16·534	8·096	11·371	20·764
2. Conversion charges . . .	6·906	8·433	14·457	6·489	7·912	12·861
	13·309	17·633	30·991	14·585	19·283	33·625
3. Packing and despatching charges to f. o. r. Bombay.	0·858	1·207	2·415	0·763	1·088	2·049
4. Interest on working capital . . .	0·155	0·206	0·366	0·168	0·224	0·393
5. Return on block . . .	0·666	0·938	1·875	0·592	0·845	1·592
6. Fair f. o. r. Bombay price per piece.	14·988	19·984	35·647	16·108	21·440	37·659
7. Freight disadvantage . . .	0·257	0·361	0·722	0·228	0·325	0·613
8. Fair f.o.r. Bombay price-cum-freight disadvantage per piece.	15·245	20·345	36·369	16·336	21·765	38·272
	Rs.	15-3-11	20-5-6	36-5-11	16-5-5	21-12-3
						38-4-4

IV

graph 12(c).]

price including freight disadvantage for grinding wheels

Abrasives Ltd., Bombay.

Electrundum 'E' Elastic bonded		Carborundum Vitrified				Carborundum Green Vitrified				Carborun- dum Elastic bonded	
10×1×1 12×2×1 10×1×1 12×1×1 12×2×1 10×1×1 12×1×1 12×2×1 12×1×1											
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
10.735	26.446	8.208	12.055	21.244	9.135	12.538	25.166	14.571			
7.184	15.152	6.489	7.947	13.000	6.143	7.391	11.821	7.912			
17.919	41.598	14.697	20.002	34.244	15.278	19.929	36.987	22.483			
0.921	2.574	0.763	1.096	2.081	0.683	0.969	1.811	1.088			
0.207	0.487	0.170	0.232	0.400	0.175	0.230	0.429	0.260			
0.716	1.999	0.592	0.851	1.616	0.531	0.753	1.407	0.845			
19.763	46.658	16.222	22.181	38.341	16.667	21.881	40.634	24.676			
0.276	0.770	0.228	0.328	0.622	0.204	0.290	0.542	0.325			
20.039	47.428	16.450	22.509	38.963	16.871	22.171	41.176	25.001			
20-0-7	47-6-0	16-7-2	22-8-2	38-15-5	16-13-11	22-2-9	41-2-10	25-0-0			

APPENDIX

[Vide Para

Statement showing the c. i. f. prices and landed costs of grinding wheels

Specification	Source of information	Corresponding trade name	$10'' \times 1$ c.i.f. Price	
			1	2
Rs. a. p				
Electrundum Vitrified .	William Jacks and Co. Ltd.	Aloxite .	12	13 10 $\frac{1}{2}$
Do.	Scott & Pickstock Ltd.	Bauxilite .	11	14 9*
Do.	Alfred Herbert (India) Ltd.	Alundum .	12	3 0
Electrundum 'V' White .	William Jacks and Co. Ltd.	Aloxite .	13	13 1 $\frac{1}{2}$
Do.	Scott & Picstock Ltd.	White Bauxilite .	12	6 0*
Do.	Alfred Herbert (India) Ltd.	Alundum .	12	12 9
Electrundum 'E' Elastic Bond- ed.	William Jacks and Co. Ltd.	Aloxite resinoid	13	5 6
Do.	Alfred Herbert (India) Ltd.	Alundum resin- oid.	12	9 3*
Carborundum Vitrified .	William Jacks and Co. Ltd.	. .	14	12 4 $\frac{1}{2}$
Do.	Scott & Pickstock Ltd.	Unirundum	13	6 0*
Do.	Alfred Herbert (India) Ltd.	Crystolon.	13	14 7
Carborundum Green Grit .	William Jacks and Co. Ltd.	. .	14	12 4 $\frac{1}{2}$
Do.	Scott & Pickstock Ltd.	Unirundum	13	6 0*
Do.	Alfred Herbert (India) Ltd.	39 Crystolon .	13	14 7
Carborundum 'E' Elastic Bonded.	William Jacks and Co. Ltd.	Carborundum resinoid	15	4 0
Do.	Alfred Herbert (India) Ltd.	Crystolon re- sinoid.	14	5 8

Particulars of c.i.f. prices and landed costs furnished by Collec

Collector of Customs, Mad-
ras. 15 4 9†

Collector of Customs, Bom-
bay. 14 0 0

NOTE.—The c.i.f. prices are either latest or based on current list prices.

V

graph 13.]

as furnished by leading importers and the Collectors of Customs

× 1"		12" × 1" × 1"			12" × 2" × 1"			REMARKS
Landed cost	c.i.f. Price	Landed cost	c.i.f. Price	Landed cost				
5	6	7	8	9			10	
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.				
20 0 3	17 11 6	27 9 0	31 10 3	49 3 6				
18 8 6	16 6 9*	25 8 3	29 5 3*	45 4 0*				
19 0 6	16 12 10	26 3 4	29 14 2	46 12 0				
21 7 1½	19 0 6	29 8 6	33 15 9	52 11 9				
19 3 6	17 1 0*	26 8 0	3 8 0*	47 3 6*				
20 0 6	17 14 8	28 0 0	32 0 0	50 0 6				
20 15 6	18 6 0	28 14 0	32 13 0	51 9 0				
19 7 11	17 5 0	26 13 4	30 15 0*	47 15 4				
22 14 0	20 5 6	31 8 0	36 5 3	56 4 0				
20 12 0	18 6 3*	28 8 3	32 12 6*	50 10 6*				
21 11 3	19 1 5	29 13 3	34 2 9	53 6 0				
22 14 0	20 5 6	31 8 0	36 5 3	56 4 0				
20 12 0	18 6 3*	28 8 6	32 12 6*	50 10 6*				
21 11 3	19 1 5	29 13 3	34 2 9	53 0 6				
23 13 3	21 0 0	32 13 0	37 8 0	58 9 6				
22 4 0	19 12 0*	30 9 10	35 2 9	54 8 3				
23 12 3†	20 15 10	32 9 10	37 5 0	58 1 0				
21 9 0	20 0 0	30 13 0	38 2 3‡	59 14 0				

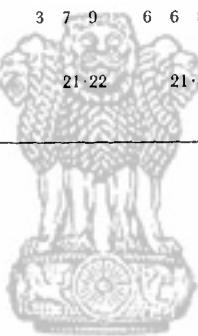
† for size 10" × 1" × ½". ‡ For size 12" × 2" × ½".

APPENDIX

[Vide Para

*Statement showing c. i. f. prices and landed costs with and without duty of
suffered by corresponding types*

Size in inches	Electrundum Vitrified						Electrundum "V" White vitrified											
	10×1×1			12×1×1			12×2×1			10×1×1			12×1×1			12×2×1		
	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
(a) C. i. f. price . . .	11	14	9	16	6	9	29	5	3	12	6	0	17	1	0	30	8	0
(b) Landing and clearing charges.	0	5	0	0	7	0	0	10	0	0	5	0	0	7	0	0	10	0
(c) Customs duty . . .	6	4	9	8	10	6	15	4	9	6	8	6	9	0	0	16	1	6
(d) Landed cost with duty .	18	8	6	25	8	3	45	4	0	19	3	6	26	8	0	47	3	6
(e) Landed cost ex-duty .	12	3	9	16	13	9	29	15	3	12	11	0	17	8	0	31	2	0
(f) Fair f.o.r. Bombay price including freight disadvantage.	15	3	11	20	5	6	36	5	11	16	5	5	21	12	3	38	4	4
(g) Difference between (e) and (f) as disadvantage to the industry.	3	0	2	3	7	9	6	6	8	3	10	5	4	4	3	7	2	4
(h) The above disadvantage (g) as percentage of c.i.f. price (a)				25.25			21.22			21.88			29.50			25.00		23.43



सत्यमेव जयते

vi

graph 14.]

imported grinding wheels, and comparative percentages of disadvantage and sizes of indigenous wheels

Electrundum "E" Elastic bonded				Carborundum Vitrified				Carborundum Green Vitrified				Carb. Elas- tic bonded
10 x 1 x 1	12 x 2 x 1	10 x 1 x 1	12 x 1 x 1	12 x 2 x 1	10 x 1 x 1	12 x 1 x 1	12 x 2 x 1	12 x 1 x 1	12 x 2 x 1	12 x 1 x 1	12 x 1 x 1	
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
12 9 3 30 15 0	13 6 0 18 6 3	32 12 6 13 6 0	18 6 3 18 6 3	32 12 6	19 12 0	12 9 3 30 15 0	13 6 0 18 6 3	32 12 6 13 6 0	18 6 3 18 6 3	32 12 6	19 12 0	
0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11	0 5 0 0 12 5 0 7 0 0 7 0 0 10 0 0 5 0 0 5 0 0 10 0 0 7 11
6 9 8 16 3 11 7 1 0 9 11 3 17 4 0 7 1 0 9 11 3 17 4 0 10 5 11	19 7 11 47 15 4 20 12 0 28 8 6 50 10 6 20 12 0 23 8 6 50 10 6 30 9 10	12 14 3 31 11 5 13 11 0 18 13 3 33 6 6 13 11 0 18 13 3 33 6 6 20 3 11	20 0 7 47 6 10 16 7 2 22 8 2 38 15 5 16 13 11 22 2 9 41 2 10 25 0 0	7 2 4 15 11 5 2 12 2 3 10 11 5 8 11 3 2 11 3 5 6 7 12 4 4 12 1	56.81 50.79 20.64 20.02 16.95 23.79 18.18 23.70 24.08							





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